

found among the observers stationed on the line of totality as it crossed the Spanish peninsula. At a still later period, when the International Union for Cooperation in Solar Research met at Meudon, last May, Dr. Janssen, as president of the congress, exhibited an unflagging interest in all that could promote the object of the meeting.

On the occasion of the transit of Venus in 1874, Janssen not only took part in the observations—going for this purpose to Japan—but devised an apparatus to take a number of pictures of the sun in a short space of time. In many ways the late astronomer distinguished himself by his photographic researches. Not only was he one of the first to direct his attention to the possibility of photographing comets and nebulae, securing satisfactory pictures of Tebbutt's comet of 1881 and of the Orion Nebula, but his photographs of the solar surface, taken at the Meudon Observatory, have acquired a world-wide renown, both for the beauty of the results obtained, and the ingenuity of the devices employed to secure short and uniform exposures. These photographs were not left as mere pictures to please the eye by the infinite variety they revealed. They were studied and compared until the photospheric network of varied granulation was made to disclose its tale, and put us in possession of the beginning of a solar meteorology. In the course of his photographic experiments he was led to suggest the use of a camera with double slits, so as to allow only a narrow portion of the spectrum to reach the photographic plate, a method of observation which in the hands of Prof. Hale and Deslandres has proved so effective.

He served his country in many capacities, but perhaps rendered no service greater than that of establishing and organising the observatory at Meudon. By this act a permanent home for the furtherance of physical astronomy and solar research has been ensured, and here the work which he began and pursued with such eagerness will be carried on with more powerful instruments than were at his command; but however successful its future career may prove, it will owe its origin in no small measure to the insistence, perseverance, and reputation of Dr. Janssen.

In many ways his colleagues acknowledged the value and extent of his services. He was Commander of the Legion of Honour, Membre de l'Institut; he was the oldest member of the Academy of Sciences, having succeeded Langier in 1873. He was also a member of the Bureau des Longitudes, and had been decorated with the Lalande medal. The learned societies of many countries enrolled his name on their list of fellows. In this country he was a foreign member of the Royal Society, from which he received the Rumford medal for his researches; Edinburgh made him an LL.D. of that university, and in 1872 he was elected an Associate of the Royal Astronomical Society.

#### NOTES.

THE annual meeting of the British Science Guild will be held at the Mansion House at 4.15 p.m. on Wednesday next, January 15, by invitation of the Lord Mayor. Mr. Haldane, president of the Guild, will address the meeting; and among other speakers will be Dr. T. H. Warren (Vice-Chancellor of the University of Oxford), Sir Archibald Geikie, K.C.B. (secretary of the Royal Society), Sir John Rhys, Sir Wm. Bousfield, Sir John Wolfe-Barry, K.C.B., F.R.S., and Mr. A. Siemens.

THE death is announced of Prof. Albert Lévy, professor of mathematics at the Paris Municipal School of Industrial

Physics and Chemistry, and director of the chemical department of the Municipal Observatory of Montsouris. Prof. Lévy was well known for his analyses of the air and water supply of Paris.

A TELEGRAM from Brownstown, Jamaica, announces that a severe earthquake occurred at 8.5 a.m. on January 3. Considerable damage is reported from Kingston and other places on the south shore.—Reuter reports on January 4 that Vesuvius is again active. The volcano is emitting clouds of vapour from large fissures near the summit of the crater, and also towards Atrio Cavallo.

A REUTER message from Rome states that Signor Rava, Minister of Public Instruction, has appointed a special commission to direct and supervise the excavations at Herculaneum, composed of Commendatore Gattini, administrative director of the Museum of Naples; Signor De Petra, professor of archæology of the University of Naples; Prof. Gabrici and Prof. Dall'Ossio, both of the Naples Museum; Prof. Sogliano, director of the excavations at Pompeii; Commendatore Avena, director of the technical office of the monuments of Naples; and two civil engineers of the province of Naples.

ON Tuesday next, January 14, Dr. A. A. Gray will deliver the first of two lectures at the Royal Institution on the internal ear of different animals, and on Thursday, January 16, Prof. W. W. Watts will deliver the first of two lectures on (1) the building of Britain. On Saturday, January 18, Prof. Gisbert Kapp will commence a course of two lectures on the electrification of railways. The Friday evening discourse on January 17 will be delivered by Prof. T. E. Thorpe, on the centenary of Davy's discovery of the metals of the alkalis, and on January 24 by Colonel David Bruce, on the extinction of Malta fever.

THE discovery of a large group of dene-holes in the woods between Woolwich and Erith, close to the ruins of Lessness Abbey, was announced in the *Times* of January 3. Two of these holes have already been explored, the position having been marked in each case by a shallow cup-like depression on the surface overgrown with verdure. Excavation in the centre of the hollow exposed the shaft, which is rather more than 3 feet in diameter, and circular in transverse section. After descending for about 50 feet through loam, the shaft enters chalk, and having penetrated this for 4 feet or 5 feet expands into chambers about 18 feet in height. In the sides of the shafts are holes, evidently for supporting a rude kind of ladder for descent. A conical mound of earth, about 10 feet high, occupies the floor at the bottom of the shaft. Each cave has six chambers grouped radially around the central shaft, so as to form in plan a rough double trefoil, recalling the pattern familiar to explorers of dene-holes elsewhere.

ACCORDING to a paper by Mr. H. Beeston published in the December (1907) number of the *Zoologist*, the breeding-range of the marsh-warbler in the south of England is gradually spreading east, a nest having been observed during the past summer in Hampshire. The nest was attached to four or five reeds at an elevation of about 4 feet, like that of a reed-warbler.

TO *Nature* for November and December, 1907, Prof. A. W. Brögger contributes an illustrated article on "coliths," in which a number of types from various parts of Europe are described and figured. The author appears to be convinced that these stones were shaped by human agency for special purposes, describing some as knives, others as scrapers, &c.

AMONG the articles in *Schriften naturfor. Ges.*, Danzig, vol. xii., part i., attention may be directed to one by Dr. A. Wallenberg on the anatomy and physiology of the central nervous system of man. The paper, of which only the first portion is now published, is based on an address delivered before the society so long ago as 1888, and has been presented to the public by request. It deals specially with modern methods of brain-research and their result, and is illustrated by several diagrams, coloured or otherwise, displaying in a remarkably clear manner the complicated system of "telegraphy" by which coordinated movements of the body are brought about.

IN his presidential address to the Indiana Academy of Science, as reported in the Proceedings of that body for 1906, Dr. Robert Hessler states that both malaria and tuberculosis seem to have made their appearance in the country since its colonisation by the white man. The advent of malaria is attributed to the felling of the forests, and the consequent periodical drying-up of the smaller rivers, and the destruction of fish, accompanied by an enormous increase in the numbers of mosquitoes. This disease rapidly attained its maximum, but, under preventive measures, as speedily declined, and has now been eliminated from large cities, and to a great extent from their suburbs. Tuberculosis, on the other hand, which is essentially a disease of civilisation, has been steadily on the increase ever since its introduction, and shows no signs of having yet attained its maximum.

THE report on agriculture in the Virgin Islands for 1906-7 refers mainly to the work done at the experiment station at Tortola under Mr. C. W. Fishlock. Although formerly cotton provided a valuable crop, the cultivation had to be re-introduced by the Imperial Department of Agriculture in 1903; since that time the industry has advanced, and is now remunerative; about one-third of the quantity grown is Sea Island cotton. It has also been demonstrated that many parts of the island are suitable for cacao cultivation. A series of illustrations of the experiment station add to the interest of the report.

IN the *Geological Magazine* (June and November, 1907) Prof. A. C. Seward publishes descriptions of fossil plants from Egypt and South Africa. Of three Egyptian specimens, only one, a new species of *Clathropteris*, is sufficiently well preserved to be named; it furnishes some evidence that the beds from which it was collected were of Rhætic or Lower Jurassic age. The material from South Africa yielded a *Phyllothea* and an *Osmundites*, both made types of new species, a *Lepidodendron* impression, and a *Bucklandia* stem. The *Osmundites* stem and the *Lepidodendron* both show interesting morphological features, while the *Bucklandia* is the first record of a Cycadean stem from plant beds of the Uitenhage series.

OWING to the character of the leaves and the intervals that elapse between the flowering periods, the classification of the genus *Agave* is a difficult matter; also the existing nomenclature is so uncertain that it becomes necessary to study the species in their native habitats. Two papers on *Agave* and the allied genus *Furcraea* are published in the eighteenth annual report of the Missouri Botanical Garden. In the former, Prof. W. Trelease discusses the three species *macroacantha*, *pugioniformis*, and *Karwinskii*, belonging to the group of *Euagaves*. The second species is merged in *macroacantha*, for which the author gives a diagnosis and illustrations showing the plant in its natural environment. Similarly the species

*Karwinskii*, that produces a trunk about 10 feet high closely set with leaves, is described. The article on *Furcraea*, contributed by Mr. J. R. Drummond, furnishes an epitome of the literature of the genus, with a synopsis of known species.

IN connection with the bicentenary of the birth of Euler, the great Swiss mathematician, *Engineering* of December 27, 1907, gives an account of his life, work, and character.

WITH the object of helping prospectors, the Geological Survey of Western Australia has compiled a Bulletin (No. 30) giving particulars of the distribution and occurrence of the ores of metals other than gold. The Bulletin, which covers 129 pages, has been written by Mr. E. S. Simpson and Mr. C. G. Gibson, and contains details of the occurrence in Western Australia of ores of copper, tin, lead, zinc, antimony, bismuth, iron, nickel, cobalt, manganese, aluminium, tantalum, tungsten, and molybdenum.

IN the *Engineering Magazine* (vol. xxxiv., No. 3) Dr. A. Gradenwitz gives an illustrated description of the Royal Bavarian Workmen's Museum at Munich. It is one of the most important museums devoted to industrial hygiene in Germany, where the cause of industrial betterment has been largely furthered by such institutions. The museum is intended to further any efforts made in the field of workmen's protection, while affording a comprehensive view of present achievements in the prevention of accidents, in industrial hygiene, sanitary habitation, and alimentation.

AT a meeting of the Association of Water Engineers on December 14, 1907, an interesting paper was presented by Mr. W. R. Baldwin-Wiseman on the influence of the thickness of the pipe wall on the rate of discharge of water from minute orifices piercing the pipe. The results of the experiments described show that, although the diameters of the orifice may vary considerably, yet for a similar ratio of the thickness of the wall to the diameter of the orifice, the coefficients of discharge are approximately the same at the pressures recorded of 60 lb., 40 lb., and 20 lb. per square inch, and that the coefficients of discharge are in general higher for large values of the ratio of thickness to diameter than for small values of that ratio.

AN elaborate memoir of considerable economic interest, by Mr. Mauric Alfassa, is published in the *Bulletin de la Société d'Encouragement* (vol. cix., No. 9). It deals with the reduction of the working day to eight hours, and records the experience of the French Government establishments and of works in other countries. The author considers that the eight hours' day is practically realisable in all cases. In the cases where the reduction has not been made, it is possible, as is shown by English experience, particularly at the works of Messrs. Mather and Platt, sensibly to abridge the working hours, maintaining at the same time the production and the cost of production, the increase in certain departments being compensated by savings effected in others.

TO the worker in pure science who finds difficulty in following the progress of applied science, the annual retrospects published in the technical journals are of special value. The most complete record of engineering progress is contained in the *Engineer* of January 3. The achievements in 1907 in the various branches of engineering practice are ably summarised, and illustrations are given of the most noteworthy works. A report on shipbuilding in

1907, published in *Engineering* of January 3, shows that in the United Kingdom 1499 ships, aggregating 1,795,409 tons (excluding three dockyard-built warships), and propelling machinery totalling 1,712,000 indicated horse-power, were turned out in 1907. A very complete record of progress in mining and metallurgy in 1907 is contained in the *Mining Journal* of December 28.

BULLETIN No. 14, on "Tests of Reinforced Concrete Beams," by Mr. A. N. Talbot, has just been issued by the University of Illinois Engineering Experiment Station. The tests described are a continuation of the tests discussed in Bulletin No. 4. The topics investigated include the effect of quality of concrete upon the strength of beams, the effect of repetitive loading upon the action of beams, and the resistance of beams to diagonal tension failures. The results of the investigation of diagonal tension failures throw light upon the amount of the vertical shearing stress which may be allowed in reinforced concrete beams not having metallic web reinforcement. The resistance of beams to diagonal tension may be the controlling feature of relatively short beams, and as such failures occur suddenly and without much warning, a knowledge of the resistance of the concrete is essential. Some beams gave surprisingly low values, and it seems evident that the values allowed by many city building ordinances are higher than should be recommended. The tests of concrete columns and reinforced concrete columns and of reinforced concrete T-beams for 1906 have already been published.

THE spell of frost which set in immediately after Christmas over the entire country was for the time severe, and the thermometer touched a lower reading than for several years past. The region of cold spread westwards from the continent of Europe. The Weather Report issued by the Meteorological Office for the week ending Saturday, January 4, covers nearly the whole period of the frost. It shows that the deficiency of temperature for the week amounted to more than  $7^{\circ}$  in the south and north-west of England, to nearly  $8^{\circ}$  in the south of Ireland, and to nearly  $10^{\circ}$  in the south-west of England. In many places the maximum temperature did not once reach  $40^{\circ}$ . The sheltered thermometer fell below  $20^{\circ}$  in all districts except the south of England, and in many parts of Scotland, Wales, and the north-west of England it fell below  $15^{\circ}$ , the lowest temperature reported being  $10^{\circ}$ , at Balmoral and West Linton. On the grass, the exposed thermometer fell to  $2^{\circ}$  at Balmoral. In the south-east of England, as well as at some places in the Midlands, the weather was still colder on Sunday, January 5, and the succeeding night. At Greenwich, the minimum shade temperature was  $18^{\circ}$ , and on the grass  $10^{\circ}$ . At Birr Castle, in central Ireland, the shade temperature was  $12^{\circ}$ , and at both Nottingham and Liverpool  $16^{\circ}$ . An exceptional rise of temperature occurred over the whole country on Monday, January 6, when the thermometer touched  $50^{\circ}$  in many places. There was a sharp fall of snow in London and the suburbs on the morning of yesterday.

In the *Annuaire Météorologique* for 1907, published by the Royal Observatory of Belgium, there is an interesting article by M. J. Vincent describing the upper-air investigations carried out by the Belgian observers by means of *ballons-sondes*. The instruments and methods employed are described in detail and illustrated, and the article will be found full of interest by all workers in this important branch of meteorology. Another article in the same publication deals with the humidity of the air in Belgium,

the subject being dealt with exhaustively and in a lucid manner. These special articles, and the large number of tables, &c., which the *Annuaire* contains, make the publication a very valuable reference work for meteorologists in general.

A SUMMARY of the results obtained from the meteorological observations made at the Catania Observatory during 1906 is given by Profs. Riccò and Cavasino in an extract from the *Atti dell' Accademia Gioenia di scienze naturali in Catania* (series 4a, vol. xx.). The actual readings and reduced values are given for each element, and in a series of notes they are compared with the analogous values for 1905.

PROF. RICCO has completed his gravitational survey of Sicily and Calabria, and published the results in the *Annale* of the Central Meteorological and Geodynamical Office of Italy (vol. xix., part i.). The distribution of gravitational anomalies in Sicily is somewhat peculiar; in the centre there is a defect which reaches the greatest observed value of  $-67$  at Caltanissetta, the unit being  $0.001$  mm. in the length of the seconds pendulum. Over the greater part of Sicily, however, the anomaly is positive, the lines of equal anomaly forming elongated ellipses with the longer axis running about N.E. and S.W., and cut off by the sea coast on the south. The anomaly reaches a positive value of  $160$  at Stromboli, and on the east coast off Syracuse, but there are some interruptions of the regularity of increase, the most important of which is on Mt. Etna. Round the foot of the mountain the anomaly has a positive value of about  $70$ , which decreases on its slopes and sinks to  $-11$  at the observatory near its summit. The magnetic survey of Sicily shows anomalies in the distribution of terrestrial magnetism, but as it is impossible to eliminate the magnetic effect of the superficial volcanic rocks, they cannot be correlated with those of gravitational attraction.

THE first part, just received, of the annual report for 1905 of the director of the Weather Bureau of the Philippines gives the results of hourly meteorological observations at the Manila Central Observatory during 1905. The hours of observations are given in insular standard time, that is, in the time of  $120^{\circ}$  E. longitude, adopted by order of the U.S. Government in 1899. The observations of atmospheric pressure, temperature, relative humidity, vapour tension, and the direction and force of the wind are hourly, read directly between 6 a.m. and 7 p.m., and from self-registering apparatus from 8 p.m. to 5 a.m. Each of the tables of hourly observations shows also the respective hourly, daily, and monthly means. The extreme daily values of the various elements, together with the times of their occurrence, are united in a separate table.

THOSE who in making measurements in which a spark gap has formed part of the apparatus have been troubled by the inconstancy of the results obtained, will welcome a simple device described by Dr. W. Eickhoff in the *Physikalische Zeitschrift* for December 15, 1907, which appears to increase the regularity of action of the gap to a very marked degree. It consists of a short piece of pointed wire, attached to the conductor carrying the negative sphere of the gap at a point close to the sphere, and bent over towards the positive sphere so that its pointed end is a little further away from the surface of that sphere than the two spheres are apart.

COMMUNICATION No. 99 from the physical laboratory of the University of Leyden contains two papers on the

variation of the electrical resistance of pure metals down to very low temperatures, by Prof. H. Kamerlingh Onnes and Mr. J. Clay. They find that the influence of very small amounts of impurities, although insignificant down to a temperature of  $-200^{\circ}\text{C}$ ., at lower temperatures becomes very marked. They express the effect by writing the resistance found equal to that of the pure metal *plus* a constant, depending on the amount and nature of the impurity. Platinum, gold, silver, lead, bismuth, and mercury have been tested between  $16^{\circ}\text{C}$ . and  $-260^{\circ}\text{C}$ . and the results agree fairly well with those obtained fourteen years ago by Sir James Dewar and Prof. Fleming down to the temperature of liquid air. They differ considerably at low temperatures from the results recently published by Mr. G. Niccolai, of Pisa, and it seems probable that the differences are due to the latter not having expressed his temperatures in terms of the international constant-volume hydrogen scale.

MESSRS. N. ZANICHELLI, of Bologna, have published as No. 10 of their series of "Attualità Scientifiche" a recent address delivered by Prof. A. Righi before the Italian Society for the Advancement of Science; the lecture is entitled "New Views on the Ultimate Nature of Matter," and covers a wide field, dealing with the nature of atoms and electrons, and embracing the question of ordinary and colloidal solution.

THE Iron and Steel Institute has published in No. 3 of its journal a detailed account of the visits and excursions during the meeting of the institute held at Vienna in September last. The report contains a large number of interesting particulars of works and mines visited by the members, together with a great deal of information regarding the development of the iron and steel industry within the Austrian Empire; the account is illustrated by several photographs.

FROM Mr. A. B. Porter ("The Scientific Shop"), 324 Dearborn Street, Chicago, U.S.A., we have received a number of circulars containing descriptions and prices of a large number of pieces of physical apparatus, many of which are novel in character and for use in special experiments. The different sets cannot be mentioned here, but the catalogue is an interesting item for anyone engaged in science teaching or research; many of the sets of apparatus are well illustrated and described. Mr. Porter has also favoured us with his "Catalogue D," giving descriptions, illustrations, and prices of numerous optical parts. Telescope objectives and mirrors, prisms, echelon and diffraction gratings, photographic lenses, &c., are included in this list. As showing the enterprise of this firm, we would note that Mr. Porter quotes a price of 38,000 dollars for a paraboloidal mirror, grade A, of 84 inches diameter and 40 feet focal length; "prices of other sizes up to 10 feet in diameter will be quoted on request."

THE virtues of celluloid as a material suitable for the sharp and clean divisions of scales or slide rules, or in its transparent form as an edge for T-squares or for set-squares, are well known. Messrs. Casella and Co. have availed themselves of these properties, and of another, viz. that fine sharp lines may be ruled upon it with some opaque black dye, in the convenient area scale, White and Bean's patent, which they have put upon the market. This is nothing more than a group of parallel lines alternately full and dotted one-quarter of an inch apart. The set of parallel lines is laid over the figure the area of which is required, e.g. a steam-engine diagram, taking care that it is so placed that the extremities of the area

lie half-way between a pair of lines on each side. Then the sum of the included lengths of all the parallel lines is found by marking them off on the edge of a strip of paper. The total length in inches divided by four gives the area in square inches. In order to avoid the necessity of dividing by four, a scale is attached in which the unit distance is 4 inches, and this is divided into one hundred parts, and so by direct application of the strip of paper to this scale the area may be read directly. Alongside of the inch scale is another scale of equal parts such that the length of 4 inches read on this scale appears as 6.45. From this, therefore, square centimetres may be read. When less accuracy is required, alternate lines only need be used, and the result multiplied by two. In the example submitted the linear dimensions are all short by 1 in 150, which would make the areas come out too much by 1 in 75.

THE current issue of Mr. Charles Baker's quarterly catalogue of second-hand optical and other instruments is now available. The list contains particulars of about 1250 pieces of apparatus on sale in this particular department of Mr. Baker's establishment.

THE list of electrical novelties just published by Messrs. F. Darton and Co., of St. John Street, London, E.C., contains numerous illustrated descriptions of pieces of electrical apparatus likely to prove acceptable presents to boys with interest in science. The catalogue also includes various applications of electricity to domestic purposes, in addition to many different patterns of widely used electrical instruments.

MESSRS. JAMES WOOLLEY, SONS AND CO., LTD., publish a compact and useful "Reference Book and Diary for 1908," intended for science teachers and students. The pocket-book contains many convenient tables of constants, brief hints as to the use of instruments, "first-aid" notes, and some advertisements, in addition to the usual form of diary. The price of the book is one shilling bound in cloth and two shillings in leather covers.

THE "Science Year-book and Diary for 1908," edited by Major B. F. S. Baden-Powell, and published by Messrs. King, Sell and Olding, Ltd., contains 152 pages of useful scientific information, a full-page diary for the year—each page being provided with useful astronomical and meteorological data for the day—and numerous blank pages for notes, cash accounts, and other memoranda. The frontispiece is a portrait of Sir Norman Lockyer, K.C.B., F.R.S. New names have been added to the biographical section, but it is difficult to understand what plan has been adopted in selecting names for inclusion in this list. The price of the volume is 5s. net.

MESSRS. NEWTON AND CO., 3 Fleet Street, E.C., have submitted to us a specimen of an instrument termed the "Vitascope," devised for the examination of small living creatures under natural conditions. The instrument is in the form of a telescope, about  $1\frac{1}{2}$  inches in diameter and a foot in length when closed, and by a novel combination of lenses it enables a magnification of about twelve diameters to be obtained at a distance of 20 inches from the object under observation, and sixty diameters at a distance of about 5 inches. With these magnifications, the observation of insects in flowers or of other small living objects, at a suitable distance from them, becomes a pleasurable and instructive pastime. The instrument has a pillar, which can be screwed upon the top of an ordinary camera stand for use in the garden to observe the struc-

ture or movements of living creatures conveniently. It should be of real assistance in the study of numerous small forms of animal life under natural conditions.

MESSRS. CHARLES GRIFFIN AND CO., LTD., have published the twenty-fourth annual issue of the "Year-book of the Scientific and Learned Societies of Great Britain and Ireland." The work is, as usual, compiled from official sources, and according to the title-page provides a record of the work done in science, literature, and art during the session 1906-7 by numerous societies and Government institutions. It is surprising to find, however, that in connection with the British Association, the only information in the book is confined to the proceedings of the York meeting in 1906, and no mention is made of the Leicester meeting in August last. Under societies concerned with geography, the Geographical Association is not included, though its membership is now nearly 650, and it has branches in various parts of this country and in South Africa. But notwithstanding such defects, which can be remedied easily in the next issue, the compilation should continue to be of real assistance as an index to British scientific associations and their work.

A LIST of publications of the Carnegie Institution of Washington, already issued or in the press, has just been received; and it reminds us of the very useful work the institution is doing by the publication of monographs on many scientific subjects of wide and deep interest. About ninety of these memoirs have been published, and most of those containing contributions to natural knowledge have been described in the columns of NATURE. Among the works now in the press, we notice an atlas of the Milky Way, E. E. Barnard; dynamic meteorology and hydrography, V. Bjerknes and J. W. Sandström; the rotation period of the sun, as determined by the motion of the calcium flocculi, G. E. Hale; inheritance in canaries, C. B. Davenport; supplementary investigations of infrared spectra, W. W. Coblentz; and botanical features of North American deserts, D. T. MacDougall. The publications are sold at a nominal price, and a list can be obtained upon application to the Carnegie Institution of Washington, Washington, D.C., U.S.A.

### OUR ASTRONOMICAL COLUMN.

RETURN OF ENCKE'S COMET (1908a).—A telegram from the Kiel Centralstelle announces that Encke's comet was found by Prof. Wolf on January 2.

Its position at 6h. 14.5m. on that date (Königstuhl M.T.) was R.A.=23h. 3m. 16s., dec.=1° 19' N., and its magnitude was 13.0.

The following is an abstract from the ephemeris given in No. 4222 of the *Astronomische Nachrichten*:—

#### Ephemeris oh. (M.T. Berlin.)

1908	$\alpha$ (app.) h. m.	$\delta$ (app.) ° ' "	$\log r$	$\log \Delta$
Jan. 11 ...	23 8.8	+2 21.9	0.2829	0.3461
" 19 ...	23 17.4	+3 7.8	0.2617	0.3477
" 27 ...	23 27.1	+4 3.1	0.2385	0.3469
Feb. 4 ...	23 38.1	+5 7.5	0.2130	0.3435

At present the comet is apparently passing through the constellation Pisces towards Aries, and sets nearly due west at about 10 p.m. The calculated time of perihelion passage is April 30, not February 22, as stated in our last issue.

SATURN'S RINGS.—No. 4222 of the *Astronomische Nachrichten* (p. 361, December 18, 1907) contains further notes on the recent appearance of Saturn's rings.

The Rev. T. E. R. Phillips states that on many occasions since the middle of October he has seen the ring clearly, as an extremely fine line of light on each

side of the planet, with his 12½-inch Calver equatorial. This line was not always uniformly luminous, but appeared continuous except on November 8, when an interruption on the following side was suspected. He believes the present visibility of the ring to be due to the sunlight passing through the Cassini division and illuminating the edge of the second ring, which is the brightest part of the system.

Dr. Lau gives the results of a number of micrometer observations of the minor axis of the rings, for position-angle, from September 3 to 28, 1907, and shows the differences between the observed and the Nautical Almanac values. The rings were seen on October 2 at 0.2h., but were invisible on October 3 at 23.1h.

THE SPECTRA OF TWO METEORS.—Using a prismatic camera made up of a Voigtländer euryscope, of 50 mm. aperture and 300 mm. focal length, with a 45° crown-glass prism placed before it, M. Blakjo, of the Moscow Observatory, obtained the spectrum of a meteor on May 11, 1904; with another camera an ordinary trail photograph was obtained at the same time. Encouraged by this chance fortune, M. Blakjo directed his cameras towards the Perseid radiant on August 12 of the same year, and was fortunate enough to secure a second meteor spectrum.

In the first case the meteor was of about the first magnitude, and of a yellow colour, and the spectrum consists of fine lines, of which, by an ingenious method of comparison with the hydrogen lines shown in the adjacent stellar spectra, M. Blakjo determined the approximate wave-lengths to the number of thirteen.

The second meteor was equally bright and of a pure green colour; during the second half of its flight it was considerably brighter than at first, and this increase of brightness increased the number of lines shown in the spectrum; the wave-lengths of ten certain and three doubtful lines were determined, and on comparison it was found that the emission spectra of the two meteors are entirely different from each other.

In the spectrum of the first meteor, the calcium lines H and K are the brightest, and are accompanied by the line at  $\lambda$  4227; magnesium and potassium are also apparently represented. Helium is apparently the outstanding feature of the spectrum of the second meteor, the lines at  $\lambda\lambda$  3819.8, 3888.8, 3964.9, 4026.3, and 4121.0 being represented. M. Blakjo accounts for the pure green colour of this object by the presence of the thallium line at  $\lambda$  3775.9 in its spectrum (*Astrophysical Journal*, vol. xxvi., No. 5, p. 341, December, 1907).

THE CONSTANCY OF WAVE-LENGTHS OF SPECTRAL LINES.—The importance of the constancy of wave-length of spectral lines in astronomical, as in terrestrial, spectroscopy leads Prof. Kayser to discuss the question in No. 3, vol. xxvi., of the *Astrophysical Journal*. He points out that Exner and Haschek based some of their recent evidence for variation on differences obtained by students in his laboratory, and states that, in his opinion, these differences were probably due to errors of the standards employed rather than to any real variability of wave-length. Prof. Kayser also adduces evidence, based on the recent work of Dr. Pfund and of Prof. Fabry, in support of his view that "the question of the constancy of the wave-lengths is finally settled."

### NEW CHEMICAL LABORATORIES AT ABERYSTWYTH.

THE Edward Davies chemical laboratories at the University College of Wales, Aberystwyth, which were formally opened on November 1 by Mr. Asquith (see this vol., p. 22), have been erected at a cost of 23,000l. by Mr. David Davies, M.P., his mother and sisters, to the memory of the late Mr. Edward Davies, J.P., and have been handed over to the governing body of the University College of Wales. The laboratories are under the direction of Prof. J. J. Sudborough, and have been in use since the opening of the present session on October 2.

The laboratories form a separate block of buildings about half a mile distant from the college, and are erected in local stone with Grinshill dressings. On the first floor are two large laboratories (50 feet by 40 feet), each con-